

## ABSTRACT

EXCEPTION HANDLING METHOD AND APPARATUS FOR USE  
IN PROGRAM CODE CONVERSION

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A method of handling exceptions for use in an emulator (20) performing program code conversion. Registers (X) of a subject machine (11) being emulated (20) are represented by a pair of abstract registers ( $X_A, X_B$ ) on the target machine (31), suitably using memory locations of the target machine and/or any available target registers. One of the pair (e.g., Reg  $X_A$ ) holds a definitive value at entry into a section (100) of subject code (10) whilst the other (e.g., Reg  $X_B$ ) holds a speculative value which is updated during translation and execution of that section of code. Exceptions are handled by recovering the conditions of the virtual subject machine (11) upon entry into the section of subject code (100) using the definitive version of each abstract register (i.e., Reg  $X_A$ ). Advantageously, the function of the pair of registers ( $X_A, X_B$ ) is alternated upon successful completion of each section of subject code (100) such that a definitive version of each register is always available for exception handling whilst avoiding time consuming copy and storing operations.

RELATED APPLICATIONS

This patent application is a continuation-in-part of pending PCT Application No. PCT/GB00/01439, filed on April 26, 1999, which is incorporated by reference in its entirety herein, and claims priority to U.S. Provisional Patent Application No. 60/135,106, filed on April 27, 1999, which is incorporated by reference in its entirety herein, and claims priority to GB Patent Application No. 9909615.8, filed on April 27, 1999, which is incorporated by reference in its entirety herein.